Document 00910

ADDENDUM NO. 2

Date of Addendum: October 15, 2015

PROJECT NAME: *Rehabilitation of Distribution Pumps, Motors, Valves, Piping and Pump Station Buildings at Various Facilities - Package B*

PROJECT NO: WBS No. S-001000-0046-4

BID DATE: October 22, 2015

FROM: J. Timothy Lincoln, P.E., City Engineer
City of Houston, Department of Public Works and Engineering
611 Walker Street, 15th Floor
Houston, Texas 77002
Attn: Tina (Na) Yao, P.E., Project Manager

TO: Prospective Bidders

This Addendum forms a part of the Bidding Documents and will be incorporated into the Contract documents, as applicable. Insofar as the original Project Manual and Drawings are inconsistent, this Addendum governs.

This Addendum uses the change page method: remove and replace or add pages, or Drawing sheets, as directed in the change instructions below. Change bars (|) are provided in the outside margins of pages from the Project Manual to indicate where changes have been made; no change bars are provided in added Sections. Reissued Drawing Sheets show the Addendum number below the title block and changes in the Drawing are noted by a revision mark and enclosed in a revision cloud.

CHANGES TO PROJECT MANUAL

SPECIFICATIONS

1. Section 13441 –SCADA Software Engineering Security and Quality Requirements . Replace entire section.

END OF ADDENDUM NO. 2

Ravi Kaleyatodi DATED: 10/15/15

Ravi Kaleyatodi, P.E., CPM
Senior Assistant Director
Engineering Branch
Engineering and Construction Division

END OF DOCUMENT

STATE OF TEXAS
ALEXANDER V. KUZOVKOV
108422
LICENSED
PROFESSIONAL ENGINEER
10/15/15

Section 13441

SCADA SOFTWARE ENGINEERING SECURITY AND QUALITY REQUIREMENTS

PART 1: GENERAL

1.01 PURPOSE

A. This document communications the requirements for SCADA software used for the control and monitoring of DWO (Drinking Water Operations) facilities. These requirements are intended to address three related areas: 1) SCADA Homeland Security Requirements, 2) Texas Engineering Practice Act, 3) COH DWO SCADA system quality requirements:

1. According to the National Strategy for Homeland Security water treatment and production facilities are part of the nation's critical infrastructure and the government agencies that are responsible shall take specific steps to improve SCADA security.

    a. Government agencies are required to "Establish policies to minimize the likelihood that organizational personnel will inadvertently disclose sensitive information regarding SCADA system design, operations, or security controls" and "Release data related to the SCADA network only on a strict, need-to-know basis, and only to persons/entities explicitly authorized to receive such information".

    b. In compliance with these Homeland Security requirements all SCADA related information is restricted to authorized personnel.

2. In compliance with Texas Engineering Practice Act (Article 3271a) and the recognition that SCADA software is an integral part of the electrical control of the water treatment and production facilities and is therefore within the jurisdiction of the act:

    a. All SCADA software related work shall be performed by a licensed engineering firm meeting the qualifications as specified in these requirements and referred to within as the Software Engineer (SE). The software produced for the project shall be stamped by the SE in accordance with (Article 3271a §137.33 Sealing Procedures for engineering software).

3. Additionally, these requirements are to refine and perpetuate software engineering and software quality standards that will benefit DWO in the areas of facility operations, maintenance, and facility construction projects:

    a. The requirements are intended to benefit facility operations through encouraging SCADA standards of consistency in facility functionality and operation, improved

process visibility, improved efficiency and control, lower operating costs and reduced potential permit violations. The SCADA standardization also addresses improved technical support and ease of maintenance.

b. These requirements specify SCADA related issues in construction, deliverables and qualifications that will help ensure the availability and quality of SCADA system integration.

c. SCADA related software integration activities have been identified as a key point of quality control for construction projects. The SE shall subcontract directly to the general contractor and shall perform an independent assessment of the SCADA related work of the other subcontractors and equipment suppliers to ensure complete system and software integration within the facility per the construction specification and DWO SCADA design guidelines.

1.02 MEASUREMENT AND PAYMENT

A. No separate payment will be made under this section. Include the cost for this work in the lump sum base bid.

PART 2: PRODUCTS

2.01 SCOPE

A. The requirements defined in this document apply to DWO SCADA software including system control, monitoring and integration. The scope includes new and existing facility construction projects where new SCADA software is required or where the existing SCADA software is modified.

B. SCADA software activities shall be performed only by the pre-approved SE and include: PLC programming, HMI configuration and graphics development, historical logging software application and report generation, network configuration and programming.

C. Manufactured packaged subsystems with pre-engineered software may be specifically excluded if specified in that subsystem equipment specification, that the system shall be shipped with the software as a fully functional unit. The system PLC and HMI hardware and software application shall meet the requirements for SCADA integration and software documentation. The packaged system provider shall deliver all software to SE as soon as possible for the purpose of review and integration.

D. These requirements apply to all SCADA security related activities including configuration of servers, workstations and network equipment.

PART 3: EXECUTION

3.01 SOFTWARE ENGINEERING REQUIREMENTS

A. The SE shall perform the software engineering functions as required by the scope of work.

B. The SE shall use the City of Houston standards for SCADA software engineering and Homeland Security in all work performed.

1. The SE shall identify and communicate omissions and required modifications to these standards.

2. Details on these standards are restricted to authorized personnel only according to the Homeland Security requirements and are not included in these requirements. The pre-approved SE is authorized for access to these standards.

C. The SE shall provide the SCADA related submittals as defined in the submittals section.

D. The SE shall perform the work required to complete the required SCADA software submittals.

E. The SE shall review and report on the SCADA related submittals of the project subcontractors and equipment providers.

F. The SE shall assist the project team including; the engineer, the water operations and equipment suppliers with the SCADA integration issues.

G. The SE shall attend project meetings as required by the project team.

H. The SE shall assist the project team with functional test of the system.

1. This may include providing project related process data from the SCADA system.

PART 4: MODIFICATIONS

4.01 SUBMITTALS

A. Within 30 days of the notice to proceed the SE shall submit a letter of SE qualifications specifically addressing each item of qualification as defined in these requirements.

B. Include the SE professional engineering firm licensed number and date of issuance.

C. Include a statement addressing the awareness of the Homeland Security concerns and intention to restrict the dissemination of security sensitive SCADA network information to those who are authorized by the COH and require the information in the support of this project.

D. Within 90 days of the notice to proceed the SE will submit the Software Engineering Manual (Preliminary Report).

E. Include the software conventions for the use in the HMI development.

F. Include diagrams and schedules for all network devices associated with the process control and monitoring for the facility/facilities.

G. Include the interfaces for the City SCADA network.

H. Identify every network component (new and existing).

I. The Software Engineering Manual will be updated for the final O&M.

J. The SE will submit letters of software and network integration compatibility to be included in all the control related submittals.

K. Included but not limited to: PLCs, network devices, computers, HMI devices.

L. Include deviations from City standards and the construction specifications for electrical control drawings and tag naming conventions.

M. Include deviations from the submitted Software Engineering Preliminary Report.

N. Include the manufacturer supplied package systems with control panels.

O. The SE shall distribute monthly a Software Engineering Integration Schedule highlighting software and system integration progress and issues.

4.02 FACTORY DEMONSTRATION TEST CONFIRMATION REPORT

A. After the required factory demonstration test the SE shall submit a report confirming the related software and network compatibility.

4.03 FIELD ACCEPTANCE FUNCTIONAL TEST

A. Shall be completed prior to performance and reliability testing.

B. Field Acceptance Functional Test Submittals shall include:

1. Field Acceptance Functional Test Plan Submittal.
2. Description of plan for testing field devices.
3. Description of plan for function test and system integration of each subsystem.
4. Field Acceptance Functional Test Schedule shall be submitted after the acceptance of the test plan submittal.
5. Field Acceptance Functional Test plan completion report shall be submitted.

4.04 UPDATED SOFTWARE ENGINEERING MANUAL (FINAL VERSION)

A. Update and submit a single flash drive with all related SCADA software.

B. Control and network components.

C. Inventory of software components.

D. Network device configuration documentation.

E. Software Engineering documentation.

F. PLC and HMI software shall be documented using the product development tool.

G. Software shall be stamped as required in Texas Engineering Practice Act (Article 3271a §137.33 Sealing Procedures) with the date, the engineers name, the PE designation with license number.

H. The SE will collect and submit all software and network device configuration programs and data developed for the project.

PART 5: SOFTWARE ENGINEER (SE) QUALIFICATIONS

A. DWO has set forth these qualifications for performing all SCADA related software activities as defined in these requirements.

B. Utilize services of one of the following SE:

1. Automation Nation, Inc. (713-906-7115).
2. BL Technology, Inc. (832-698-8000).
3. Approved Equal.

5.01 SPECIFIC QUALIFICATIONS FOR PRE-APPROVED SE

A. The SE shall be a Texas Registered Professional Engineering firm with a minimum of five (5) years of licensed history. Software Engineering, Control systems Engineer or Electrical Engineering Licences are preferred. Experience with water treatment and production facilities is required.

B. The SE shall be experienced with the software application development packages which are used as standards for DWO, including a minimum three (3) years of software engineering experience with G.E. IFIX HMI application development packages and Siemens PLCs.

C. The SE shall demonstrate a minimum of three (3) years of continuous Cisco Advanced Security expertise. This ensures the SE has the required expertise to configure, secure and maintain the SCADA system network for applicable projects.

D. The SE shall have errors and omissions insurance with coverage in the amount of $1,000,000.00 (aggregate).

E. The SE shall have an existing office, within the City of Houston, and shall maintain that office for the duration of the warranty and extended software service requirement.

F. To ensure effectiveness and objectivity in the review and reporting of SCADA related integration issues, the SE shall be an independent entity and provide only software engineering services for the construction projects. Additional scope of automation and electrical services may be provided as required by the owner. The services may include, but not limited to network diagram development, efficiency and optimization program and application implementation, data dictionary design guideline development.

END OF SECTION